

- (21) Application No. 60089/72 (22) Filed 29 Dec. 1972 (19)
 (31) Convention Application No. 7 223 096 (32) Filed 20 June 1972 in
 (33) France (FR)
 (44) Complete Specification published 25 Sept. 1974
 (51) International Classification D01G 7/02
 (52) Index at acceptance
 D1N 1B11 1B1 1B2 1B8



(54) IMPROVEMENTS IN DEVICES FOR THE SEPARATION OF TEXTILE FIBRES

(71) I, BERNARD RUDLOFF, of 67 Marckolsheim, Bas-Rhin, France, of French nationality, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a device for progressively opening tangled conglomerations of textile fibres and individually separating the textile fibres.

There are numerous known devices, some of which effect sufficient separation of textile fibres with a view to their mechanical spinning continuously on conventional spinning machines. There are other known devices which effect disintegration and simultaneous cleaning of flocks by removing any foreign bodies, the fibres being subjected during this process to more or less violent shocks such that the fibres are damaged, for example ruptured by tension or excessive beating.

However, even during carding or combing, the desired individual separation of the fibres is not always obtained by the known means.

The invention is therefore intended to provide a device for opening tangled conglomerations of textile fibres and individually separating the fibres without excessive damage, however fragile they may be.

According to the invention there is provided a device comprising at least one strip or cable with its two ends attached to respective supports, and actuating means for deflecting and releasing a median portion of the strip or cable so that the latter passes through a multiplicity of transverse vibrations whilst in contact with some of the fibres.

A conglomeration of fibres to be treated with the device according to the invention is placed into contact with the vibrating strip or cable by which it is shaken and progressively opened until the fibres are separated and then removed individually.

This opening does not rupture the fibres

or alter or fatigue the same to any serious extent. On the contrary, under the effect of the high frequency vibrations, the fibres tend to regain their initial condition as prior to being compressed in bales.

Simultaneously with the separation of the fibres cleaning of the same occurs insofar as foreign bodies, such as husks, grains, or dust, previously contained within the mass of fibres become eliminated by gravity.

By way of example a device in accordance with the invention is explained with reference to the accompanying diagrammatic drawing, in which

Figure 1 is a lateral view of the device, and Figure 2 is a plan view.

The illustrated device comprises a strip or cable 1 with its two ends attached through springs 6 or other elastic means to supports 2 and 3. A wheel 4, or any other member suitable for the purpose, is provided with a cam 4¹ at the extremity of which is mounted a roller 5.

The wheel 4 is driven in rotation by means of a motor (not shown) or other driving means so that the cam 4¹ pushes the strip or cable 1 downwards into the tangled fibres *F*. In consequence a median portion of the strip or cable 1 is deflected and the strip or cable is put under tension by the roller 5. When the roller 5 releases the strip or cable 1 this latter passes through a multiplicity of transverse vibrations which remain within the vibratory field comprised within the chain-dotted oval (Figure 1) between limit positions *A* and *B*. Due to the transverse vibrations of the strip or cable 1 in the mass of the fibres *F*, and to the continued repetition of the vibrations, the fibres are progressively disengaged and are separated each one from the others in order to be projected, individually, out of the vibratory field whence they are sucked away and transported, for example by pneumatic conveyance, by means of a known arrangement.

The strip or cable 1 may be made of metal, plastics material, rubber, or organic material capable of vibrating at high frequency, it

may be disposed horizontally or vertically or at an inclination.

The device permits the opening and the individual separation of fibres of all sorts of lengths, even mixed, without necessitating preliminary adjustment of the components.

The device is preferably mounted with a plurality of similar devices upon a single framework.

The strip or cable 1 can be actuated by any suitable means capable of causing it to vibrate transversely.

The device may be utilised in preparatory treatment in the field of spinning filaments of cotton, or wool, of jute, or of synthetic or artificial fibres cut for use in spinning or carding or combing or in carding-spinning, and in the preparation of fibres used in the field of non-woven materials.

20

WHAT I CLAIM IS:—

1. A device for opening conglomerations of tangled textile fibres and individually separating the textile fibres, characterised in that it comprises at least one strip or cable with its two ends attached to respective supports, and actuating means for deflecting and releasing a median portion of the strip or cable so that the latter passes through a multiplicity of transverse vibrations whilst in contact with some of the fibres.

25

2. A device according to Claim 1, wherein the ends of the strip or cable are

30

attached to the respective supports through springs or other elastic means.

35

3. A device according to Claim 1 or 2, wherein the strip or cable is made of metal, plastics material, rubber or organic material capable of effecting vibrations at high frequency.

40

4. A device according to Claim 1, 2, or 3, wherein the actuating means comprises a wheel driven in rotation and provided with a cam at the extremity of which is mounted a roller.

45

5. A device according to any one of Claims 1 to 4, wherein the strip or cable is disposed horizontally vertically or at an inclination.

6. A device according to any of Claims 1 to 5, mounted with a plurality of similar devices upon a framework.

50

7. A device according to any one of Claims 1 to 5, coupled to a device for sucking away and pneumatically conveying the separated fibres.

55

8. A device for opening conglomerations and individual separation of textile fibres, constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawing.

60

HANS & DANIELSSON,
Chartered Patent Agents,
32, Lodge Lane,
London, N.12 8JJ.

Fig. 2

The diagram shows a central vertical rod (4) passing through a rectangular block of material (5). A horizontal rod (1) is attached to the bottom of the vertical rod (4) and passes through the block (5). The horizontal rod (1) is connected to two springs (6), which are in turn connected to two fixed supports (3 and 2). A force vector F is shown acting on the block (5) from the right.